Printed Pages : 1 Roll No. EEC035



**B.TECH.**

**THEORY EXAMINATION (SEM–VIII) 2016-17**

**INTRODUCTION TO RADAR SYSTEM**

***Time : 3 Hours*** ***Max. Marks : 100***

***Note :*** *Be precise in your answer. In case of numerical problem assume data wherever not provided.*

## SECTION – A

**1. Explain the following:** **10 x 2 = 20**

**(a)** What do you mean by maximum unambiguous range?

**(b)** What are the applications of radar?

**(c)** What is called a missed detection?

**(d)** Define MTI improvement factor?

**(e)** What is stalo and coho?

**(f)** What is Doppler Effect and how it is useful in long distance communication?

**(g)** Write the advantage of Digital MTI radar over analog MTI radar?

**(h)** Define blind speed?

**(i)** What are the various types of radar tracking system?

**(j)** What are the limitations that affect the accuracy of tracking radar?

## SECTION – B

**2. Attempt any five parts of the following questions:** **5 x 10 = 50**

**(a)** Derive the Range equation for target detection by the Radar

**(b)** Explain the concept of radar cross-section of targets

**(c)** Draw the block diagram and explain the operation of CW radar using zero intermediate frequency in the receiver?

**(d)** Explain digital MTI Doppler signal processor?

**(e)** Explain Conical Scan and its merits over lobe switching?

**(f)** What is ambiguity function ? Discuss the ambiguity function of a simple pulse.?

**(g)** Write short note on accuracy of Radar measurement?

**(h)** Derive an expression for probability of false alarm?

## SECTION – C

**Attempt any two parts of the following questions:** **2 x 15 = 30**

**3** Describe the various types of delay lines used in MTI radar. Explain the frequency response.

**4** What do you mean by coherent, non-coherent and binary integration? Discuss non-coherent integration of nonfluctuating targets ?

**5** (i) Show that the maximum range of Radar operating at a given frequency is proportional to the linear dimension of the antenna?

(ii) Describe the various antenna parameters?